



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2008-0618; Directorate Identifier 2007-NM-355-AD]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Supplemental notice of proposed rulemaking (NPRM); reopening of comment period.

SUMMARY: We are revising an earlier proposed airworthiness directive (AD) for all The Boeing Company Model 777 airplanes. That NPRM proposed to require performing repetitive operational tests of the engine fuel suction feed of the fuel system, and other related testing if necessary. That NPRM was prompted by reports of two in-service occurrences on Model 737-400 airplanes of total loss of boost pump pressure of the fuel feed system, followed by loss of fuel system suction feed capability on one engine, and in-flight shutdown of the engine. This action revises that NPRM by proposing to revise the maintenance program to incorporate a revision to the Airworthiness Limitations Section of the maintenance planning data (MPD) document. We are proposing this supplemental NPRM to detect and correct failure of the engine fuel suction feed of the fuel system, which, in the event of total loss of the fuel boost pumps, could result in dual engine flameout, inability to restart the engines, and consequent forced landing of the airplane. Since these actions impose an additional burden over that proposed in the previous NPRM, we are reopening the comment period to allow the public the chance to comment on these proposed changes.

DATES: We must receive comments on this supplemental NPRM by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may review copies of the referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Sue Lucier, Aerospace Engineer,
Propulsion Branch, ANM-140S, 1601 Lind Avenue SW., Renton, Washington
98057-3356; phone: 425-917-6438; fax: 425-917-6590; email: suzanne.lucier@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2008-0618; Directorate Identifier 2007-NM-355-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

We issued an NPRM to amend 14 CFR part 39 to include an AD that would apply to all The Boeing Company Model 777 airplanes. That NPRM published in the Federal Register on June 6, 2008 (73 FR 32253). That NPRM proposed to require repetitive operational tests of the engine fuel suction feed of the fuel system, and other related testing if necessary. That NPRM was prompted by reports of two in-service occurrences on The Boeing Company Model 737-400 airplanes of total loss of boost pump pressure of the fuel feed system, followed by loss of fuel system suction feed capability on one engine, and in-flight shutdown of the engine. The subject area on Model 777 airplanes is almost identical to that on the affected Model 737-400 airplanes. Therefore, those Model

777 airplanes may be subject to the unsafe condition revealed on the Model 737-400 airplanes.

Actions Since Previous NPRM (73 FR 32253, June 6, 2008) was Issued

Since we issued the previous NPRM (73 FR 32253, June 6, 2008), we have received comments from operators indicating a high level of difficulty performing the actions in the previous NPRM during maintenance operations.

Relevant Service Information

We reviewed Section 9, “Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs),” D622W001-9, Revision February 2012, of the Boeing 777 Maintenance Planning Data (MPD) Document. Among other things, Section 9 describes AWL No. 28-AWL-101, “Engine Fuel Suction Feed Operational Test, of Section D.2., Engine Fuel Suction Feed System,” which provides procedures for performing repetitive operational tests of the engine fuel suction feed of the fuel system.

Comments

We gave the public the opportunity to comment on the previous NPRM (73 FR 32253, June 6, 2008). The following presents the comments received on the previous NPRM and the FAA’s response to each comment.

Requests to Clarify if Engine Fuel Suction Feed Test is Allowed in Lieu of the Operational Test

Airlines for America (A4A) on behalf of its member American Airlines (AAL), Japan Airlines (JAL), Air New Zealand (ANZ), British Airways (BA), and Boeing asked that we clarify the engine fuel suction feed test procedure in the airplane maintenance manual (AMM) as an option to performing the operational test in the previous NPRM (73 FR 32253, June 6, 2008). AAL and BA asked that we consider adding the engine fuel suction feed manifold leak-test procedure specified in the AMM task card as an option to performing the operational test. AAL, JAL, and ANZ stated that Boeing 777 Task Card

28-020-02-01 specifies two approved procedures to perform the operational test, but operators need only one of those to perform the test. JAL also stated that it has been doing the operational test as specified in MPD Item 28-020-00 or 28-02-01, as applicable; these MPD items identify AMM Task 28-22-00-710-802, “Engine Fuel Suction Feed – Operational Test,” and AMM Task 28-22-15-790-808, “Engine Fuel Feed and Refuel Manifold Leak Isolation,” at 7,500 flight-hour intervals. JAL stated that the two tasks are equivalent tests and each would satisfy the operations test requirement of the previous NPRM.

We agree to provide clarification. The manifold test (Task 28-22-00-710-801) is not equivalent to the operational test (Task 28-22-00-710-802) for the purposes of this proposed action. The positive internal fuel line pressure applied during the manifold test does not simulate the same conditions encountered during fuel suction feed (i.e., vacuum), and might mask a failure. Therefore, we have not changed the supplemental NPRM in this regard.

Request to Extend Compliance Time

United Airlines (UAL) asked that we extend the compliance time in the previous NPRM (73 FR 32253, June 6, 2008) from 7,500 flight hours to 7,500 flight hours or 25 months. UAL stated that this extension would provide operators the opportunity to do the test during maintenance checks.

We agree with the commenter for the reason provided; however, Boeing has recommended a standardized calendar time for that compliance time extension of “Within 7,500 flight hours or 3 years, whichever is first.” Therefore, we have changed this supplemental NPRM to revise the maintenance program to incorporate the AWL identified in Appendix 1 of this AD, which includes an interval of “7,500 flight hours or 3 years, whichever is first.” With the exception of including a calendar time in the task interval, Appendix 1 of this AD is equivalent to AWL No. 28-AWL-101, “Engine Fuel

Suction Feed Operational Test,” of Section D.2., “AWLS – Fuel Systems,” of Section 9, “Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs),” D622W001-9, Revision February 2012, of the Boeing 777 Maintenance Planning Data (MPD) Document.

Request to Include Corrective Action

Boeing asked that additional testing, better described as corrective action, be included in the proposed requirements of the previous NPRM (73 FR 32253, June 6, 2008). Boeing recommended that paragraph (f) of the previous NPRM be changed to add corrective actions in case the engine suction feed operational test is not successful.

We disagree with the request to include corrective action for this supplemental NPRM, since the AWL already includes that requirement. Therefore, we have not changed the supplemental NPRM in this regard.

Request to Clarify Reason for the Unsafe Condition

Boeing asked that we clarify the reason for the unsafe condition identified in the previous NPRM (73 FR 32253, June 6, 2008). Boeing asked that the AD include the results from a report of in-service occurrences of loss of fuel system suction feed capability on one engine, due to two in-service engine flameout events on a Model 737-400 airplane while operating on suction feed with undetected air leak failures. Boeing stated that there are no known reports of any engine flameout related to events on Model 777 airplanes. Boeing acknowledged that undetected air leaks could exist and that this maintenance procedure is a proactive measure to ensure engine flameout will not occur during suction feed operation.

We agree to clarify the unsafe condition. We have revised the Summary section and paragraph (e) of this supplemental NPRM accordingly.

Requests for Changes to Certain Maintenance Document References

Boeing asked that we remove the AMM reference to Section 28-22-00 specified in paragraph (f) of the previous NPRM (73 FR 32253, June 6, 2008). Boeing stated that the AMM is covered in Boeing 777 Task Card 28-020-02-01, and noted that having fewer references included lessens the chance of errors. UAL asked that we specify using the task card or the AMM, but not require using both. UAL also noted that the AMM reference to the General Description section of the AMM is incorrect. UAL stated that the correct reference is in Section 28-22-00, titled “Engine Fuel Feed System – Adjustment/Test.” ANZ added that, since the task cards are extracts from the AMM, the previous NPRM should state that two methods are approved. BA stated that the task card is already covered by the AMM, and noted that the task card identified in paragraph (g) of the previous NPRM applies only to Trent powered airplanes. Boeing also asked that we consider adding engine specific task cards for operational tests of the engine fuel suction feed.

We acknowledge and agree with the commenters concerns regarding the maintenance documents referenced in the previous NPRM (73 FR 32253, June 6, 2008). However, these maintenance documents are not FAA approved and we do not have the publication controls associated with AD-related service documents. We do not agree with incorporating the requested changes because we have mandated an FAA-approved document instead, which should eliminate these issues. We have made no change to the supplemental NPRM in this regard.

Requests to Allow the Use of Later Revisions of the Maintenance Documents

ANZ, BA, and Boeing asked that we allow using later revisions of the referenced maintenance documents, because those documents could be revised over time and would require frequent requests for alternative methods of compliance (AMOCs).

We do not agree with the request. Allowing later revisions of service documents in an AD is not allowed by the Office of the Federal Register regulations for approving

materials incorporated by reference. We have made no change to the supplemental NPRM in this regard.

Request to Revise Costs of Compliance Section

AAL asked that the cost estimate be changed. AAL stated that the cost estimate specified in the previous NPRM (73 FR 32253, June 6, 2008) should not reflect labor only, because approximately 10 minutes of engine run-time will consume roughly 600 pounds of fuel per operational test. AAL noted that for its current fleet of 47 Model 777 airplanes, this equates to an additional 28,200 pounds of fuel expended every 7,500 flight hours to accomplish the proposed test.

We acknowledge the commenter's request. Although fuel is used during the operational test, we have not received data on the amount of fuel used during a test. In addition, fuel costs vary among operators. Therefore, we do not have definitive data that would enable us to provide a cost estimate for the fuel used. In any case, we have determined that direct and incidental costs are still outweighed by the safety benefits of the AD. We have made no change to the supplemental NPRM in this regard.

FAA's Determination

We are proposing this supplemental NPRM because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design. Certain changes described above expand the scope of the original NPRM (73 FR 32253, June 6, 2008). As a result, we have determined that it is necessary to reopen the comment period to provide additional opportunity for the public to comment on this supplemental NPRM.

Proposed Requirements of the Supplemental NPRM

This supplemental NPRM revises the previous NPRM (73 FR 32253, June 6, 2008), by proposing to revise the maintenance program to incorporate a revision to the Airworthiness Limitations Section of the MPD document.

This supplemental NPRM proposes to require a revision to certain operator maintenance documents to include new operational tests. Compliance with these tests is required by 14 CFR 91.403(c). For airplanes that have been previously modified, altered, or repaired in the areas addressed by these tests, the operator might not be able to accomplish the tests described in the revisions. In this situation, to comply with 14 CFR 91.403(c), the operator must request approval for an AMOC according to the procedures specified in paragraph (j) of this AD. The request should include a description of changes to the required tests that will ensure the continued operational safety of the airplane.

Explanation of Change to Costs of Compliance

Since issuance of the previous NPRM (73 FR 32253, June 6, 2008), we have increased the labor rate used in the Costs of Compliance from \$80 per work-hour to \$85 per work-hour. The Costs of Compliance information, below, reflects this increase in the specified labor rate.

Costs of Compliance

We estimate that this proposed AD would affect 676 airplanes of U.S. registry. We estimate the following costs to comply with this proposed AD:

Estimated costs

Action	Labor cost	Cost per product	Cost on U.S. operators
Maintenance Program Revision	1 work-hour X \$85 per hour = \$85	\$85 per test	\$57,460, per test

We have received no definitive data that would enable us to provide a cost estimate for the on-condition actions or the optional terminating action specified in this AD.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs" describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

The Boeing Company: Docket No. FAA-2008-0618; Directorate Identifier 2007-NM-355-AD.

(a) Comments Due Date

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all The Boeing Company Model 777-200, -200LR, -300, and -300ER series airplanes, certificated in any category.

(d) Subject

Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 2800, Aircraft Fuel System.

(e) Unsafe Condition

This AD was prompted by reports of two in-service occurrences on Model 737-400 airplanes of total loss of boost pump pressure of the fuel feed system, followed by loss of fuel system suction feed capability on one engine, and in-flight shutdown of

the engine. We are issuing this AD to detect and correct failure of the engine fuel suction feed of the fuel system, which, in the event of total loss of the fuel boost pumps, could result in dual engine flameout, inability to restart the engines, and consequent forced landing of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Maintenance Program Revision

Within 90 days after the effective date of this AD: Revise the maintenance program to incorporate the Airworthiness Limitation (AWL) identified in Appendix 1 of this AD. The initial compliance time for accomplishing AWL No. AWL-28-101 is within 7,500 flight hours or 3 years after the effective date of this AD, whichever is first.

(h) No Alternative Actions, Intervals, and/or Critical Design Configuration Control Limitations (CDCCLs)

After accomplishing the revision required by paragraph (g) of this AD, no alternative actions (e.g., tests), intervals, or CDCCLs may be used unless the actions, intervals, or CDCCLs are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (j) of this AD.

(i) Credit for Incorporating Previous Maintenance Program Revision

This paragraph provides credit for the actions required by paragraph (g) of this AD, if those actions were performed before the effective date of this AD using AWL No. 28-AWL-101, Engine Fuel Suction Feed Operational Test, of Section D.2., AWLS – Fuel Systems of Section 9, Airworthiness Limitations (AWLs) and Certification Maintenance Requirements (CMRs), D622W001-9, Revision February 2012, of the Boeing 777 Maintenance Planning Data (MPD) Document, provided the revised “interval” specified in Appendix 1 of this AD is incorporated into the existing maintenance program within 90 days after the effective date of this AD.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in the Related Information section of this AD. Information may be emailed to:

9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

(1) For more information about this AD, contact Sue Lucier, Aerospace Engineer, Propulsion Branch, ANM-140S, 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6438; fax: 425-917-6590; email: suzanne.lucier@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may review copies of the referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221.

Appendix 1.

AWL NUMBE R	TASK	INTERVAL	APPLICABILITY	DESCRIPTION
28- AWL- 101	ALI	7,500 FH or 3 years, whichever is first	ALL	<p>Engine Fuel Suction Feed Operational Test</p> <p>An Engine Fuel Suction Feed Operational Test must be accomplished successfully on each engine individually. This test is required in order to protect against engine flameout during suction feed operations, and must meet the following requirements (refer to Boeing AMM 28-22-00):</p> <p>Fuel Tank Quantity Limitations:</p> <p>Engine No. 1</p> <ul style="list-style-type: none"> a. The Center Tank Fuel Quantity must not exceed 5,000 lbs (2,270 kg). b. The Main Tank No. 1 Fuel Quantity must be between 1,400 lbs – 1,600 lbs (600 kg – 800 kg). <p>NOTE: Excess fuel can be transferred to Main Tank No. 2.</p> <p>Engine No. 2</p> <ul style="list-style-type: none"> a. The Center Tank Fuel Quantity must not exceed 5,000 lbs (2,270 kg). b. The Main Tank No. 2 Fuel Quantity must be between 1,400 lbs – 1,600 lbs (600 kg – 800 kg). <p>NOTE: Excess fuel can be transferred to Main Tank No. 1.</p>

AWL NUMBE R	TASK	INTERVAL	APPLICABILITY	DESCRIPTION
				<p>Test Procedural Limitations:</p> <ol style="list-style-type: none"> 1. The Fuel Cross-Feed Valve must be CLOSED. 2. The APU Selector Switch must be OFF. 3. Idle Engine Warm-up time of minimum two minutes with Boost Pump ON. 4. Idle Engine Suction Feed (Boost Pump OFF) operation for a minimum of five minutes. <p>NOTE: APU may be used to start the engines provided the Fuel Tank Quantity and Test Procedural Limitations are met.</p> <p>The test is considered a success if engine operation is maintained during the five-minute period and engine parameters (N1, N2, and Fuel Flow) do not decay relative to those observed with Boost Pump ON.</p> <p>A suction fee system that fails the operational test must be repaired or maintained, and successfully pass the Engine Suction Feed Operational Test prior to further flight.</p>

Directorate Identifier 2007-NM-355-AD

Issued in Renton, Washington, on February 15, 2013.

Kalene C. Yanamura,
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service.

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